

The offshore wind French market: past, present and future

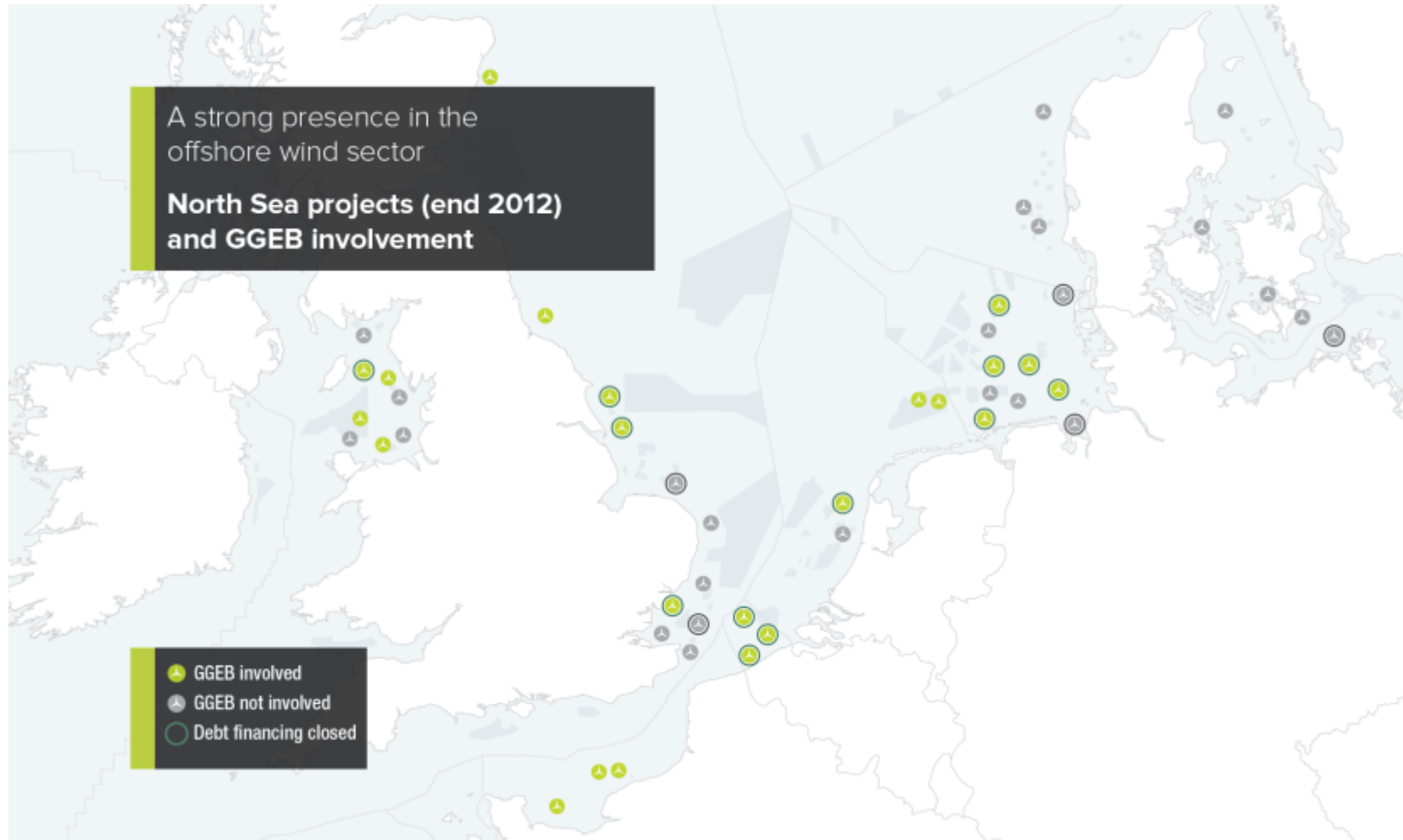
Windforce 2014, Bremen – 18 June 2014

Pierre Etienne Claveranne



GGEB – the offshore wind finance specialists



A strong focus on offshore wind



GGEB – the offshore wind finance specialists

We have an unparalleled track record in successfully closing deals for our clients

- 22 professionals in Hamburg (DE), London (UK), Utrecht (NL) and Paris (FR)
- Project & structured finance, M&A & contracting expertise
- Focus on offshore wind

<p>Non-recourse financing of the C-Power offshore wind farm</p> <p>325 MW</p>  <p>Belgium 2010</p>	<p>EUROMONEY ProjectFinance 2010 Deals of the Year</p>  <p>INFRASTRUCTURE AWARDS 2010</p> <p>PFI AWARDS 2010</p>	<p>Non-recourse financing of the Northwind offshore wind farm</p> <p>216 MW</p>  <p>Belgium 2012</p>	<p>Project Finance Deals of the Year 2012</p> <p>PFI AWARDS 2012</p>	<p>Non-recourse financing of 25% stake in Walney offshore wind farm</p> <p>367 MW</p>  <p>UK 2012</p>	<p>(Sponsor)</p> <p>PFI AWARDS 2012</p>	<p>Non-recourse financing of the Noord Oost Polder onshore wind farm</p> <p>195 MW</p>  <p>The Netherlands 2014</p>	<p>Awards pending...</p>
<p>Non-recourse financing of the Meerwind offshore wind farm</p> <p>288 MW</p> <p>WindMW</p> <p>The Blackstone Group</p> <p>Germany 2011</p>	<p>Project Finance Deals of the Year 2011</p> <p>(Sponsor)</p> <p>PFI AWARDS 2011</p>	<p>Advisory services Offshore wind tender</p> <p>1,428 MW</p>  <p>DONG energy</p> <p>France 2012</p>	<p>Acquisition of the Deutsche Bucht project by Highland</p> <p>210 MW</p> <p>Highland Group Holdings</p> <p>Germany 2012</p>	<p>Equity and non-recourse financing of the Gemini offshore wind farm</p> <p>600 MW</p>  <p>The Netherlands 2014</p>	<p>(Sponsor)</p> <p>Project Finance Deals of the Year 2013</p>	<p>Awards pending...</p>	

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2. Regulatory framework for offshore wind
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1. Introduction to the French offshore wind market

6 GW of capacity to be installed by 2020

Courseulles-sur-Mer, 450 MW

- **EDF Energies Nouvelles / DONG Energy**
- GDF Suez / Vinci

Round 1

Fécamp, 498 MW

- **EDF Energies Nouvelles / DONG Energy**
- GDF Suez / Vinci

Round 1

Saint-Brieuc, 500 MW

- EDF Energies Nouvelles / DONG Energy
- GDF Suez / Vinci
- **Iberdrola / Eole res**

Round 1

Saint Nazaire, 480 MW

- **EDF Energies Nouvelles / DONG Energy**
- GDF Suez / Vinci

Round 1

Ile d'Yeu et de Noirmoutier, 496 MW

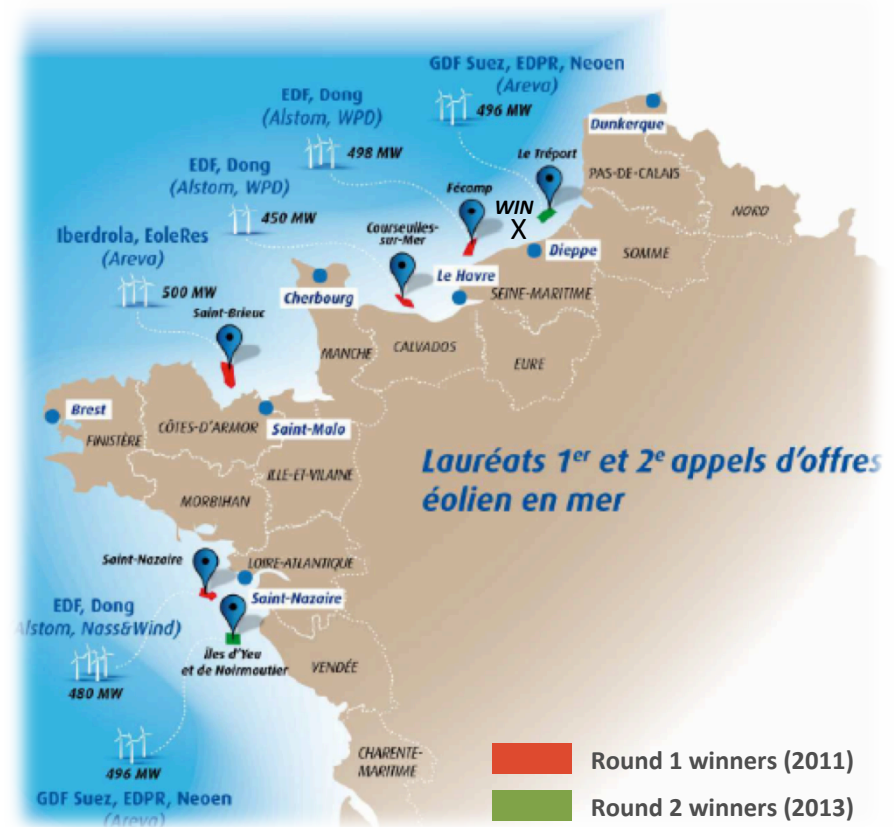
- EDF Energies Nouvelles / wpd
- **GDF Suez / EDPR / Neoen**

Round 2

Le Tréport, 496 MW

- EDF Energies Nouvelles / wpd
- **GDF Suez / EDPR / Neoen**

Round 2



Source: CRE

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2. Regulatory framework for offshore wind

A late start-up, but it's now in place

2000, first law

- The electricity law sets out the basis for tendering and defines the feed-in tariffs ("FiT")

2004, first tender

- 105 MW Veulettes sur Mer offshore wind farm (WIN)
- 100 EUR/MWh FiT over 20 years
- Construction not started yet:
 - Delays due to administrative issues
 - Weak business case given the FiT level

2007, new FiT but no projects

- 130 EUR/MWh for 10 years
- FiT linearly increases from 30 to 130 EUR/MWh for wind farms which energy yield ranges from 2,800 to 3,900 full load hours for years 11 to 15

2008, "Le Grenelle de l'environnement" and 2020 EU targets

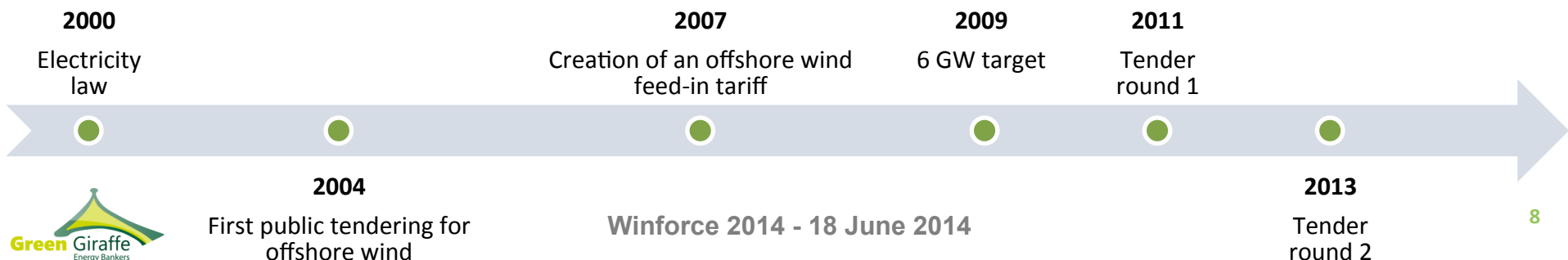
- 23% of France energy from renewable energy sources by 2020

2009, "Grenelle de la mer" and offshore wind targets

- 6 GW of installed offshore wind capacity by 2020
- Tendering process:
 - Round 1 (2011): 3 GW over 5 zones
 - Round 2 (2013): 1 GW over 2 zones
 - To date 3 GW have actually been awarded

The public tendering framework :

- French national electricity authority (CRE): in charge of tender and procurement processes, designates the winners
- Bids scoring: 100 points based on the bid price (40%), the industrial plan (20%), environmental impact (20%)
- French Energy Minister: projects attributions



2. Regulatory framework for offshore wind

French feed-in tariff and revenue mechanism

Awardee remunerated through two tariffs and an energy yield reference

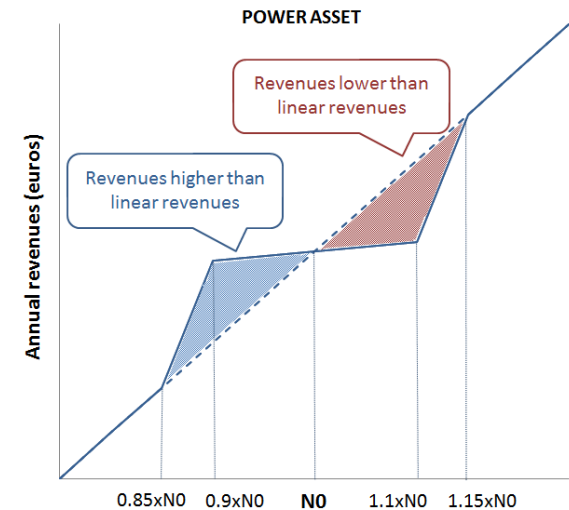
- P_{OE} tariff, allocated to the development, construction, operation and financing of the power generating assets ("Power Asset")
- P_{OR} tariff, allocated to the remuneration for the construction and financing of the grid connection assets ("Grid Asset")
- N_0 full load hours reference level

Revenues are based on those three components and actual production

	Power Asset	Grid Asset
Tariff	<ul style="list-style-type: none"> • [115-220] EUR/MWh • Inflated • No adjustment for cost overruns 	<ul style="list-style-type: none"> • Sized on an expected 7.25% pre-tax project IRR • Tariff adjusted in case of cost variation
Duration	<ul style="list-style-type: none"> • 20 years • Starting on completion of each project phase 	<ul style="list-style-type: none"> • 20 years • Starting on completion of the first project phase
Inflation	<ul style="list-style-type: none"> • 60% inflated annually <ul style="list-style-type: none"> - 40% labour cost index - 20% industry production cost index • 40% fixed 	<ul style="list-style-type: none"> • Fixed value

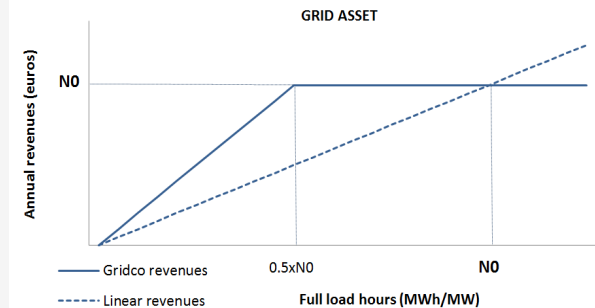
Power Asset revenues

- Protection if the energy yield is below N_0 by less than 15%
- Lower revenues if the energy yield exceeds N_0 by less than 15%
- Linear otherwise



Grid Asset revenues

Indifferent to Power Asset performance as long as the energy yield is above 50% of N_0



2. Regulatory framework for offshore wind

Risk allocation		
Risks	Power Asset	Grid Asset
Development	<ul style="list-style-type: none"> • Bid awarded before permitting efforts have started 	<ul style="list-style-type: none"> • Borne by the TSO, and indirectly by the Awardee
Construction	<ul style="list-style-type: none"> • Performed by awardee • Cost overruns borne by awardee 	<ul style="list-style-type: none"> • Construction and operation performed by TSO • Cost overruns are financed by awardee • Grid Asset tariff is adjusted on the basis of actual costs
Operation	<ul style="list-style-type: none"> • Operation performed and operating cost overruns borne by awardee • Under-performance mitigated by revenue mechanism 	<ul style="list-style-type: none"> • Operation performed and operating costs borne by TSO
Financing	<ul style="list-style-type: none"> • Construction funding to be provided by awardee 	<ul style="list-style-type: none"> • Construction funding to be provided by awardee
Ownership	<ul style="list-style-type: none"> • Legal and economic ownership by the awardee 	<ul style="list-style-type: none"> • Legal ownership by the TSO • Economic ownership by awardee
Delays and impacts	<ul style="list-style-type: none"> • PPA duration is shortened by half of construction delays attributable to awardee • Grid connection delay leads to postponement of PPA but no compensations 	<ul style="list-style-type: none"> • TSO is bound to connect Power Asset by a certain date
Legal	<ul style="list-style-type: none"> • Maritime domain concessions are yet to be created and be made acceptable/ [bankable] for awardee 	<ul style="list-style-type: none"> • Risk borne by TSO

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3. The French offshore wind industry take-off

Overview of the 6 projects awarded to date

Project	Fécamp	Courseulles sur Mer	Saint Nazaire	Saint-Brieuc	Ile d'Yeu et de Noirmoutier	Le Tréport
Award date	April 2012	April 2012	April 2012	April 2012	May 2014	May 2014
Initial Sponsors	EDF EN DONG Energy	EDF EN DONG Energy	EDF EN DONG Energy	Iberdrola Eole res	GDF Suez EDPR / Neoen	GDF Suez EDPR / Neoen
Initial Developer	wpd	wpd	Nass & Wind	Eole res	Neoen	GDF Suez
Bid turbine supplier	Alstom	Alstom	Alstom	Areva	Areva	Areva
Bid technology	Haliade 6 MW	Haliade 6 MW	Haliade 6 MW	AREVA 5MW/8MW	AREVA 8 MW	AREVA 8 MW
Foundation technology	Gravity based	Monopile	Monopile	[Jacket]	Jacket	Jacket
Key dates		2012 bid award 2015 feasibility studies, public debate 2017 construction start 2018 20% installed 2019 50% installed 2020 100% installed			2014 bid award 2017 feas. study, public debate 2020 construction start 2021 40% installed 2022 90% installed 2023 100% installed	

3. The French offshore wind industry take-off

Supply chain development lead by the turbine manufacturers

Two major supply chain centers





- Alstom, concentrated around Saint-Nazaire and Nantes
- Areva, concentrated around Le Havre and Rouen




Knowledge transfer from neighboring countries

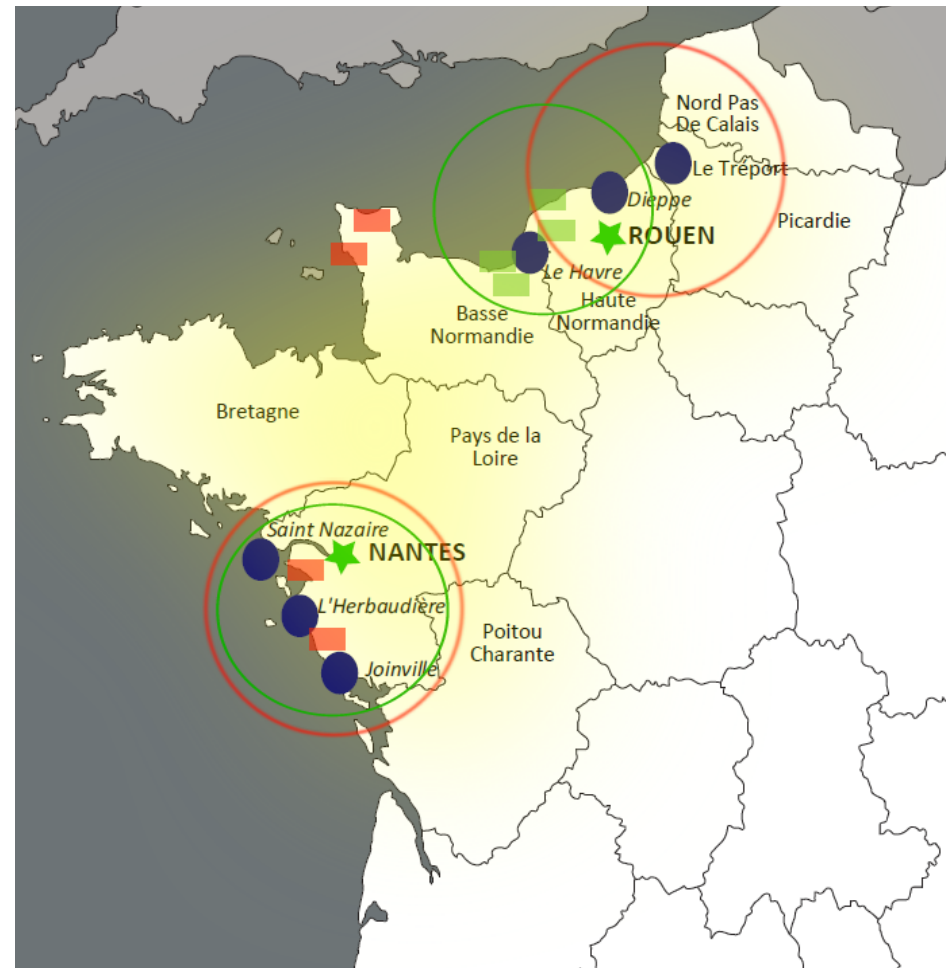
- Lessons learned of other country in the build- up of the offshore wind supply chain

Focus on turbine related supply chain investment

- Other contractors yet to be tendered and selected

-  Positively impacted regions
-  R&D centres
-  Turbines manufacturing plants - AREVA
-  6,000 direct and indirect job creation - GDF Suez led consortium

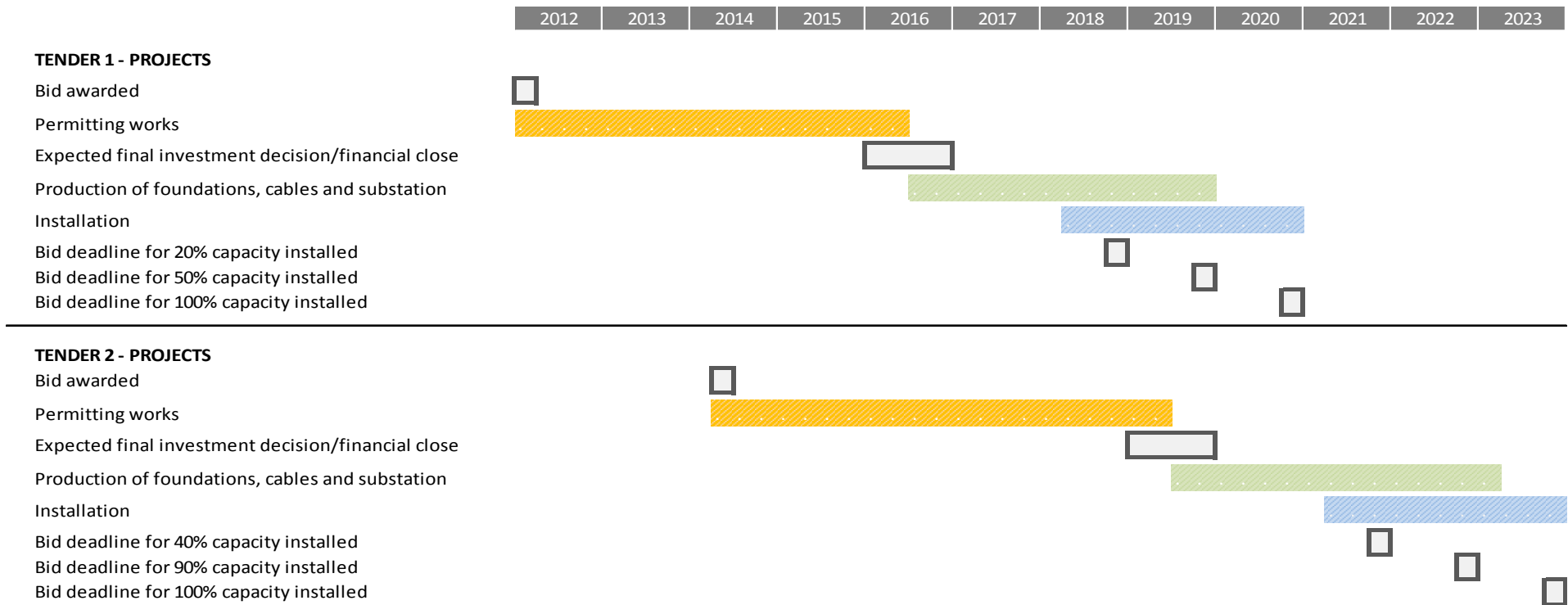
-  Main harbours
-  Turbines manufacturing plants - ALSTOM
-  7,000 direct and indirect job creation - EDF EN led consortium



Source: GGEB

3. The French offshore wind industry take-off

A timetable set in the tendering process



- The bid requires the awardee to have built the offshore wind farms within a certain period of time (unless the awardee encounters excusable delays)
 - 4 projects (2 GW) to be built between 2017 and 2020
 - 2 projects (1 GW) to be built between 2020 and 2023

- Such constructions will need to be funded either on balance sheet and/or through project finance resulting in commitments of
 - [8] billion in 2016
 - [4] billion in 2019

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4. Financing the French offshore wind sector – the equity market

Some lessons

An active market – and a wider range of investors beyond utilities than people assume

- Infrastructure funds and pensions funds (PensionDanmark, PKA, Industries Pension, TCW, PGGM)
- Private equity groups (Blackstone, etc.)
- Corporations with specific strategies (LEGO, Colruyt, Marubeni)
- and many more sniffing around the sector

Valuations are actually relatively consistent

- Permitted projects – development cost + premium @ 200kEUR/MW
- Contracted projects – construction cost @ 3.5MEUR/MW unlevered (or 1.1 MEUR/MW levered)
- Operational projects – linked to regulatory framework and IRR target of investors (8-10%)

Trade off between risk and returns now closely examined

- As more assets are operational, the universe of investors grows and IRR targets are going down
- A number of investors are now looking to take construction risk to improve returns (to double digits)
- A “bankable” deal is also one which many investors can find attractive

The European context

The uncertainty is beginning to clear

- There was a lot of regulatory uncertainty in the two main markets
- Utilities, faced with the wider changes in the power market, are reconsidering their strategies in offshore wind, both for existing assets and for new projects
- New entrants still wary of construction risk

UK projects awaiting EMR process conclusion

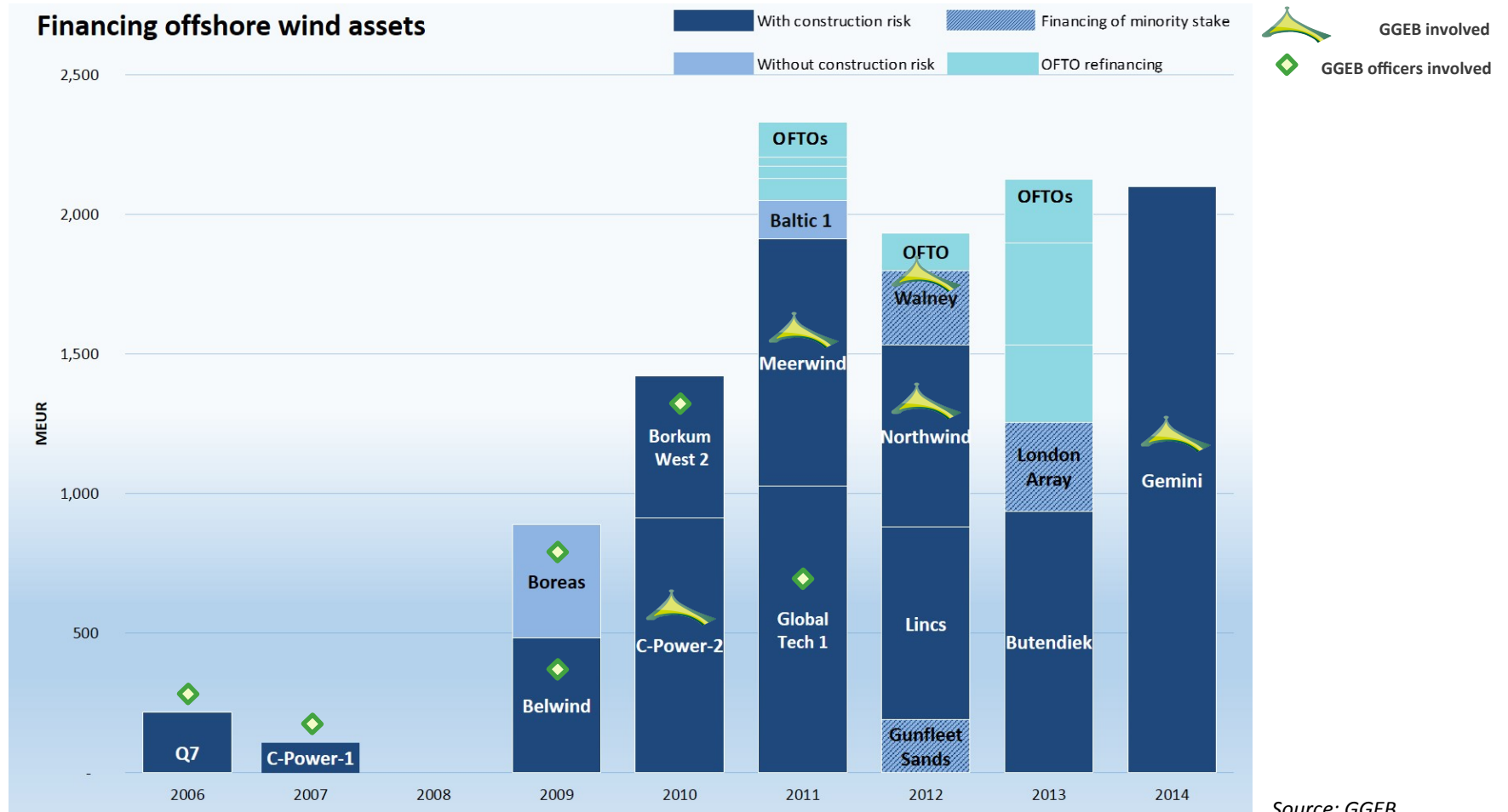
- Delay on EMR “end game” has caused some projects to be dropped
- Gap between Round 2 (now almost completely built) and Round 3 is going to be longer than expected, with 1-3 year delay
- UK government looking to ration construction via CFD quotas
- On the other hand, there are 3+GW of operational assets and some of these will come on the market

Germany also moving to a “rationed” system

- Grid issues have been solved; the solution proposed (grid “queue”) is likely to slow down overall pipeline development
- Recent announcements suggest regime stability, but lower overall volume, i.e. pragmatism and realism
- Projects under construction have faced multiple issues and delays

4. Financing the French offshore wind sector – the debt market

Sustained activity – including construction risk



4. Financing the French offshore wind sector – the debt market

Some lessons

Good projects can find money

- Active market, despite prevailing comments to the contrary
- Very different transaction profiles, but all managed to obtain competitive debt conditions
- There is no “UK malediction” – offshore wind construction financing has been done in all regulatory regimes
- No bank or individual institution is indispensable

The market is consistent in its requirements

- Debt sizing principles are quite stable and predictable
- Due diligence standards and main covenants are similar across transactions
- The same rules apply in different countries and with different banks involved

The European context

The bank market is broader and broader

- More than 30 banks have taken offshore wind risk today
- More than 20 banks have construction exposure
- More have expressed their appetite
- Several active public financial institutions that can contribute as much as the commercial banks

An average EUR 100 M available per bank per year















- EUR 30-150 M exposure per bank per year, in 1-3 deals

Liquidity timing constraints

- UK projects in 2015
- French project in 2016
- Quality of projects, contracts, due diligence will be the key critical items discriminating between the projects that will get funding and the others

Altogether, there are EUR 5 billion of debt funding available for 4-6 industrial size projects (400 MW) per year today

4. Financing the French offshore wind sector

Strengths and weaknesses	
Items	Opinion of GGEB
 Regulatory framework <ul style="list-style-type: none"> • Tariff • Concession 	<ul style="list-style-type: none"> • The tariff is linked to inflation which is very attractive to investors and lenders • There is no precedent of this type of concession in France  
 Financing attractiveness <ul style="list-style-type: none"> • Country profile • Liquidity 	<ul style="list-style-type: none"> • Appetite from equity and debt providers for French projects, • Enough liquidity in general, possible constraints in 2016 to be considered  
 Grid assets <ul style="list-style-type: none"> • Grid operator • Delay 	<ul style="list-style-type: none"> • The project relies on TSO's ability to connect the wind farms in time • The PPA is extended in case of delays of the grid connection  
 Supply Chain <ul style="list-style-type: none"> • Building-up the supply chain 	<ul style="list-style-type: none"> • Industrialization is underway with turbine production centers and harbors of sufficient size being planned, actual construction of plants and start of mass production is yet to happen
 Technologies <ul style="list-style-type: none"> • Reliable turbine manufacturers 	<ul style="list-style-type: none"> • Areva's turbines are considered as a proven technology with already operating wind farms • Alstom's prototypes are getting built, assuming adequate guarantees and shareholding sorted out  
 Sponsors	<ul style="list-style-type: none"> • Utilities with considerable balance sheets and experience with other projects in Europe

Green Giraffe Energy Bankers

Paris

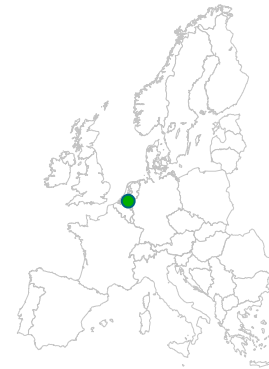


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